1: Gifford E-4,5 (1920-1921) 1929 OU9 Tonga OU9

Hereditary: matapule and *mua*
Canoe builders (*tufunga fou vaka*)
Cutters of whale-teeth (*tufunga fono lei*)
Funeral directors (*tufunga tapu*)
Hereditary: *mua* and *tua*
Stone-masons (*tufunga tao maka*) [or *aholangamaka*]
Net-makers (*tufunga sia kupenga*)
Fishermen (*tufunga toutai ika*)
Large house builders (*tufunga langafale*)
Hereditary or not: *mua* and *tua*
Tattooers (*tufunga ta tatau*)
Club-carvers (*tufunga tongi akau*)
Hereditary or not: *tua*
Barbers (*tufunga fai kava*)
Hereditary: *tua*
Cooks (*tangata fei umu*)
Peasants (*kai fonua*)

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463

It is to be noted that all of the occupations fall into matapule, *mua*, and *tua* ranks—people below the chiefly class. The term *tufunga* is applied generally to skilled artisans of all sorts. Artisans in addition to those listed by Mariner are *tufunga lalava* (sinnet artist) who applies the ornamental geometric designs in sinnet and *tufunga tui la*, sail maker. A ship carpenter not only does the actual carpentering but also the wrapping and tying of the sinnet. Many house carpenters, on the other hand, do only carpentering and leave the ornamental wrapping of the sinnet to the sinnet artist.

[565] 335 463

In general, one man did not practice many different occupations. At the present time a *tufunga* in the Hihifo district, Tongatabu, is both a house carpenter and a stone mason.

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The traditional origin of the various *tufunga* is unknown. The informant Josiah Paluto was positive that the first *tufunga langafale* in his family did not get the office from the Tui Tonga, but thinks it was a special reward for merit conferred by some local chief. All appointments were confirmed by the Tui Tonga, or by his local representatives; only those *tufunga* whose local chief was the Tui Tonga himself were invariably appointed directly by the Tui Tonga. Nowadays the Tui Kanokupolu confers the *tufunga* titles. As stated by informants, the rights of artisanship ran in the paternal line of descent, preference in each group being given to the oldest son. The order is: (a) sons; (b) brother's sons; (c) father's brother's sons and son's sons—(equal preference); (d) sister's sons; (e) father's sister's sons.

463 554 643 622 463 428 [611]

The dominant determining element was the personal preference of the *tufunga*. If the father died before the son had reached dependable age, it became the family duty of that son to learn the craft as best he could, but not under the tutelage of a *tufunga* outside the family.

It was the duty of all sons to follow their father's trade but only the eldest son received his father's title. If the eldest son should so neglect his family duty as to repudiate the family craft, the next in order of relationship was given the opportunity, depending upon the choice of the old *tufunga*. An old *tufunga*, however, who arbitrarily and without apparent reason broke

[624]

1: Gifford E-4,5 (1920-1921) 1929 009 Tonga 009

the order of family right to the craft, was severely criticized and socially punished by his family and even by his neighbors. The informant was in doubt as to whether the confirming chief would override such an illogical choice.

If the male members in the family of a *tufunga* lack aptitude, ambition, or any other necessary quality, or show decided inferiority in comparison with someone outside the family, this outsider, following a presentation of gifts to the *tufunga* (from the applicant's family), may be chosen to succeed to the order. This appointee's sons then continue to carry on the particular *tufunga* tradition and practice.

All the people of a village contribute toward the building of the chief's house under the direction of a single *tufunga*.

Some living representatives of *tufunga* families in Lifuka Island, Haapai, are as follows:

Josiah Paluto, *tufunga langafale* and *tufunga lalava*, his father, Job Femuiaki, his grandfather and his great-grandfather were also *tufunga;* Ngauamo, *tufunga vaka;* Femuiaki, *tufunga langafale;* Mailau Fuopau, *tufungataomaka.*

According to a Vavau informant, carpenters were called the "Children of Tangaloa Tufunga," that is, "Tangaloa the Artisan." A tradition states that before the time of Ulukalala, the carpenters were driven from Vavau during a war and went to Fiji to settle and that there they built a fort, so strong that the Fijians could not take it. This brief snatch of legend suggests a sort of organization on the part of the carpenters, but at the present time there is nothing in the nature of a carpenters' guild.

Only one person in a family held the title which went with a trade. As usual, the title seems to have descended most frequently from the father to the eldest son. Thus the predecessor of Eke, a boat builder of the Hihifo district, Tongatabu, was his mother's father, who also was Eke—a title which is bestowed by the chief Ata. The present Eke had the title conferred upon him by the present Ata. Eke is of Samoan extraction and of matapule rank; in fact, the name Eke is a matapule name. An ancestor of the present Eke is believed to have come from Samoa in the time of Tohuia, the Samoan mother of Ngata, the first Tui Kanokupolu.

The father, paternal grandfather, and a great-grandfather of Fakauho, another house builder of the Hihifo district, all bore the same title and were all carpenters. The present Fakauho, popularly known as Fiso, had his title conferred upon him by the present Ata about 1910. Fakauho is also a stone mason and constructs stone burial vaults (*fonualoto*). Should the chief Ata want a house built, he orders the Fakauho to do the work. Fakauho's assistants are his relatives, but Ata orders commoners to help in the rough and heavy work.

1: Gifford E-4,5 (1920-1921) 1929 OU9 Tonga OU9

rough and heavy work. He feeds them with the best of foods. When the work is over, he makes a handsome present of fine mats and other objects to the chief carpenter. A carpenter, even if dissatisfied with the conditions, may not throw down his tools—as is done in Samoa. A carpenter may build houses for matapules and commoners as well as chiefs. Only rarely he builds a house for a commoner, and only when the commoner is so fortunate as to possess something suitable as a present. Most commoners erect their own humble dwellings. The matapules, however, invariably having plenty of worldly goods, can well afford to pay the carpenter.

Burial vaults made of six slabs of coral limestone forming a rectangular box are the work of stone masons called *tufunga taomaka*. Mariner limits the stone mason to the *mua* and *tua* classes but Fakauho, who is at the same time mason and carpenter, is a matapule—perhaps a modern exception.

Fishing

Communal fishing (*pola*) in Tonga is practiced on a large scale. In a seaside community a *toutai*, to whom the special name of *pulepola* (ruler of the *pola*) is applied, organizes the fishing. He gets a number of men (*kauleo*) to assist him in supplying of materials and constructing the apparatus. In a *pola* held near Nukualofa on February 12, 1921, about forty of these men directed the activities of more than a thousand people:

On February 9, the *kauleo* with their wives and children, headed by the *pulepola*, assembled at the appointed place and for two days made preparation. Before noon of February 12 the apparatus, including a huge fence of coconut leaves, was completed. Meantime all the countryside, men, women, and children, had gathered on the beach to take part in the fishing. The *pulepola*, the district chief, and the *kauleo* caught two baskets of fish which were sent to the Queen by two boys on horseback. After this tribute was made, everyone kept what he caught, even those who had taken no hand in the construction of the apparatus. The *kauleo* and the *pulepola* were well oiled, girded with good mats and *sisi* and wore flower garlands about the neck. The rest of the people were dressed in ordinary working clothes.

Each *tofia* (hereditary lands of a chief) had exclusive rights to the *pola* grounds (*tanungapola*) on its waterfront and any community fronting on the shore could at will construct *pola* on its waterfront. Inland communities did not take part, obtaining fish from seashore peoples of the same chiefly districts.

If the shore lines of a chief's territory did not possess the sandy bottom essential to the *pola* construction, he could seek permission to use a neighboring *tanungapola*. Should permission be granted, the chief of the *tofia*

1: Gifford E-4,5 (1920-1921) 1929 OU9 Tonga OU9

(Calla Filatonga) and the god Fatafehi (66, pp. 276, 277; 19, vol. 1, p. 403), whom I could not identify. All informants interviewed denied the existence of any deity with the name Fatafehi.

Tangaloa

Tangaloa, the sky god, is regarded in Vavau as being the deity who hauled up the Vavau group, his fish hook catching in what is now the island of Hunga (41, vol. 1, p. 271). The attribution by the Vavau people of this great act to Tangaloa instead of Maui is perhaps due to some special development of Tangaloa worship in Vavau. Tangaloa Tufunga, though said not to be a god of Niuatoputapu, is the patron of carpenters elsewhere in Tonga.

Maui

The Maui were characterized by one informant not as gods but as men, and they are believed to appear sometimes as men. In other words, they are really culture heroes who correspond better to the designation of demigod than of god. According to Maatu of Niuatoputapu, Maui is not credited with having benefited that island. He is, however, reputed to have drawn up successively the islands of Ata, north of Tongatabu, and Tongatabu with all of its associated islands, then Lofanga and the other Haapai islands, and lastly the Vavau group (38, p. 113). There are several places in the Tongatabu and Vavau groups which have tales connecting them with the exploits of the Maui. At Toloa, Tongatabu, certain breakers are said to represent the great fowl (*moa*) wounded by Maui, who hurled stones at it, as it flew from Eua. Thus, when a wave approaches the shore and breaks only in part it is said to be the fowl approaching. The part of the wave which is breaking is called the good wing of the bird. The part which does not break is said to be the broken wing of the bird, which has been struck by Maui's missile.

There is a definite localization of tales about Maui in Eua Island and in the Vavau group, seemingly drawing upon two separate sets of tales, which in modern times have been more or less amalgamated. In Eua, Maui Kisikisi and his father and mother are said to have lived at Haatua. At that place there is a large stretch of ground with a deep depression which is called the Matalanga-a-Maui. The tale recounts that the father chided Kisikisi for not working, whereupon the boy in anger seized his great digging stick, plunged it into the ground and worked it back and forth, shaking Eua terribly. His father ordered him to desist lest he upset the island, and Kisikisi expostulated at the unequal treatment he received, one time hearing complaint because he did no work, and then hearing further complaint as soon as he started to make a garden. In exasperation he cast his digging stick over the cliff Le-

2: Mariner F-5 (1806-1810) 1818
OU9 Tonga OU9

was amusing himself on deck by firing off his musket*, he bade him try to bring that man down from aloft: without the least hesitation he levelled his piece, and instantly brought him down dead: the shot entered his body, and the fall broke both thighs and fractured his skull; upon which Finow laughed heartily, and seemed mightily pleased at the facility with which it was done. When Mr. Mariner understood the language, he asked the king how he could be so cruel as to kill the poor man for so trifling a fault: his majesty replied that he was only a low, vulgar fellow (a cook); and that neither his life nor death was of any consequence to society†.

On Tuesday, the 9th of December, it being spring-tides, the ship floated, and was warped in to low water mark. In the evening they set fire to her, in order to get more easily afterwards at the iron work. All the great guns on board were loaded, and as they began to be heated by the general conflagration they went off, one after another, producing a terrible panic among all the natives. Mr. Mariner was, at

* The Sandwich islanders are pretty well acquainted with the use of fire-arms: their chief had, at that time, 2000 stand of muskets, procured at different times from American ships.

† The lower orders are thought to have no souls, and a cook is considered the most vulgar profession among them; while a carpenter is esteemed the most respectable.

3: Mariner F-5 (1806-1810) 1818
OU9 Tonga OU9

who follow this profession are sailors: their mode of catching fish is chiefly with the net, though they sometimes make use of the line and hook.

LANGA FALLE, house-building. Every man knows how to build a house, but those whose business it is have chiefly to erect large houses on *maláis*, consecrated houses, and dwellings for chiefs. The general form of their houses is oblong, rather approaching to an oval, the two ends being closed, and the front and back open; the sloping thatched roof descending to within about four feet of the ground, which is generally supported by four posts; the larger houses by six, or sometimes more. The chief art in building a house consists in fastening the beams, &c. strongly, with plait of different colours, made of the husk of the cocoa-nut, in such a way as to look very ornamental; the colours, which are black, red, and yellow, being tastefully disposed. The thatch of the superior houses is made of the dried leaves of the sugar-cane, and which will last seven or eight years without requiring repair. The thatch of the common houses is made of matting formed of the leaves of the cocoa-nut tree, and which lasts about two or three years; but being much easier to make than the other, it is more frequently used. The flooring is thus made: the

13: Beaglehole & Beaglehole E-5 (1938-1939) 1941
OU9 Tonga OU9
Vavau
Pangai

342 closed, and the husks baked for about four days. Then the
283 oven is opened, the husks removed and buried in the reef shallows for a further three or four days. Then the husks are placed on a wooden base and pounded with a wooden pounder until all the inter-fibrous material is removed. The fibres are dried and are now ready for braiding.

342 The braiding is done by a working-party consisting of
283 men and women who are invited to a *kava* party. The fibres
464 are rolled on the thigh or sole of the foot and are made into
476 three-ply braid. Half a dozen men and women, working industriously will probably braid up to one hundred fathoms in a long evening's work. Until the required amount is finished, the prospective owner will use all his spare time braiding this sennit.

342 If the house is to be well built and something to be proud
335 of, it is necessary to engage the services of an expert builder
463 to supervise the building, lay out the framework, fit the poles and beams securely and neatly, and to tie the more ornamental and complicated lashings. If such an expert is not a
[465] relative, he is given today for his services a gift of perhaps two pounds in cash for a one-fathom house, six pounds for a two-fathom house and proportionately more for a larger house. The size of the house is referred to in terms of the length of the rectangular central portion of the house, excluding the extra length provided by the apsidal ends.
[461] A two-fathom house may take some two weeks to build if the work is carried on without major interruptions. If the expert is a member of the household or a relative, he would expect only a gift of a large pig together with food-staples for his services.

342 The heavy work of building and thatching together with
464 all minor jobs are carried out by a working-party made up
476 of members of the household, relatives, and friends. The workers are fed generously by the house-owner. Women make all the thatching-sheets, wall-mats and floor-mats. They also help prepare the food for the workers. The division of labour and the organization of work are such that many are called upon to help before the structure is at last completed.

13: Beaglehole & Beaglehole E-5 (1938-1939) 1941
OU9 Tonga OU9
Vavau
Pangai

three master-fishermen; three other fishing-experts; three experts in medicine. Excepting cases where one individual may be an expert in more than one activity, this gives a total of fifteen different experts, of whom two in medicine are women, the rest being men.[11]

In some of these activities men other than the experts often claim enough skill to carry them on at a lower than expert level of efficiency. Thus many Pangai men can put up with some degree of neatness a small Tongan-style house. If on the other hand, one wanted to build a large Tongan house, complete with ornamental lashings and finished to the last detail, then the services of the recognized village expert would be necessary. Again, many doctor themselves for small pains and aches. Should pain become acute or not readily yield to simple treatment, then one of the recognized experts will be called in.[12] Finally, a man may fish with success indifferent or otherwise, according to what skill, luck, or knowledge he possesses. Should it be desired however, to carry out a large communal fishing expedition, then it would be absolutely imperative to place the direction of such an expedition in the competent hands of one of the master-fishermen.

The varied skills of these experts and the compensations they receive for their services are mentioned elsewhere in the consideration of specific economic activities.

Planting and Cultivation

Clearing of land to be used for gardens may be done at any time of the year. A suitable area is selected, due consideration being given to exposure to sun, shelter from prevailing winds, and relative nearness to the formed bush-tracks that lead back to the village. The trees and undergrowth are cut down and thrown to one side. When dry they may be burnt and the ashes scattered over the cleared

[11] Gifford (*Tongan Society*, pp. 143-146) mentions the names and duties of still other artisans who are not apparently represented today among the men of Pangai village.

[12] Native medical treatment is forbidden by law but is practised everywhere, even in villages that have easy access to Government medical service.

22: West M-3 (1846-1855) 1865 OU9 Tonga OU9

342 sorry resistance to strong winds or heavy rains.
[824] On the other hand, there is capital ventilation; and
[354] perhaps that is of greater importance in such a hot climate, than even freedom from the more occasional annoyances attendant upon stormy weather. To compensate for the lowness of the walls, the roof of a Tonguese house is carried to a considerable height. The rafters are closely set, and are
[824] generally made of the outer wood of the cocoa-nut tree, or of the bread-fruit tree, the latter of which has much the appearance of cedar wood, and has a very pleasing and beautiful effect when nicely finished. The large beams, to which the rafters are
[335] attached, are laid along the grooved tops of high and durable posts, which reach about half way up the entire height of roof. The inner ridge pole is
[353] usually ornamented by a profusion of sinnet wrappings of varied colours and geometrically interlaced. The roof itself is covered with a thick thatch,
[824] made from the leaves of the sugar-cane or of the bamboo, and is perfectly water-tight. A well-built house will last a good many years; but the thatching requires to be renewed, under the most favourable circumstances, about once in five years. The
[352] floor is laid with a profusion of dried leaves, which
[824] are in turn covered over with numbers of mats made from the cocoa-nut leaf, upon which again the finer sitting and sleeping mats are placed. No provision is made in the interior of either native or European house for cooking conveniences. A
[354] separate building contains the kitchen requisites, and the heat of the climate renders a fire-place in the dwelling house unnecessary. What is wanting in the architectural beauty of these houses is amply remedied by the loveliness of the natural bowers,

462 edible wild fruits, pandanas for weaving, and mulberry wands (hiapo) which provide the bark for tapa cloth.

463 335 178 Specialization is common and always part-time. Two men in Puke are specialists in carpentry and neatly divide the available demand by one specializing in the knowledge of traditional carpentry and the other specializing in Western design and methods. Some projects call for the skills of both men, thus affording them a chance to contrast their approaches. While one scurries about taking measuremnts with a steel ruler and making references to smudged pencil marks on paper scraps, the other relies on eye-balling and his ability to reassure others with knowing grunts of wisdom. Oddly, the two techniques seem compatible, both being equally incomprehensible to non-carpenters.

463 Other specialties found in Puke were the construction of fishing paraphernalia, the practice of native medicine by both men and women, undertaking, and canoe building. The village fishermen are also recognized as specialists, particularly a man who was the only one who could consistently take lobster by what was understood as a secret method. No individuals seemed to be recognized as specialists in gardening, but some of the older men were conceded to be the most knowledgeable in that area.

(226)

241 Gardening

Utilization of the garden plots follows a rotation plan wherein products most important in terms of their social prestige are planted and harvested immediately following a fallow period. The next crop

76: Yuncker N-4,5 (1953) 1959 OU9 Tonga OU9

20, 1953, *Yuncker 15385;* on terrace south of Vaingana River, Nov. 13, 1951, *Hürlimann 279.* 137

Kao: in open forest on rocky slope, May 6, 1953, *Yuncker 15968.*

Rather frequent in forested areas. Also in Samoa.

Tongan name: *kotone.*

The wood is used for banana shooks and general building purposes; the flowers and fruits, for leis; and the aril, for ornament. [824] [335] [301]

Myristica inutilis Rich, ex A. Gray, U.S. Expl. Exped., Bot. 1: 34, 1854.

Small tree with slender branchlets. Leaves lanceolate, oblong- or obovate-elliptic, acuminate, base obtuse or acutish, thin, up to 25 cm. long and 7 cm. wide, pinnately nerved, brown-pubescent beneath, petioles up to 2.5 cm. long. Flowers small, in axillary clusters; fruit oblong, brown-pubescent when young, up to 3 cm. long, short apiculate, aril lacinated.

Tongatapu: *U.S. Expl. Exped.*

In Samoa, Solomon Islands, and the New Hebrides, but there is some question as to the occurrence of this species in Tonga. It was included by Hemsley in his list but later collectors have apparently not found it. It was cited by Gray from Tutuila and Savaii as abundant and from Tongatapu.

Family Monimiaceae

Genus **Hedycarya** Forster

Hedycarya alternifolia Hemsley, Linn. Soc. Bot., Jour. 30: 215, 1894.

Glabrous tree. Leaves alternate, round-ovate or broadly elliptical, obtuse, remotely and obscurely denticulate, up to 10 cm. or more long and 8 cm. wide. Flowers very small, on a depressed hypanthium, in axillary racemose clusters.

'Eua: *Lister.* Endemic.

Perkins [in Pflanzenr. 49 (IV. 101. Nachtr.): 7, 1911] excludes this species from the genus and, further, expresses doubt that it belongs in the Monimiaceae.

Hedycarya denticulata (A. Gray) Perkins and Gilg, Pflanzenr. 4 (IV. 101): 19, 1901.

Tree up to 10 m. or more tall. Leaves opposite, elliptic-ovate, acute at both ends, distantly and minutely denticulate, up to 10 cm. or more long and 6 cm. wide, petiole 2 cm. or more long. Flowers very small, borne on a convex hypanthium, in terminal branching clusters; fruit ovoid, pointed, up to 1 cm. long.

'Eua: in forested area near center of island, Mar. 18, 1953, *Yuncker 15333.*

Infrequent. Also in Samoa.

Hedycarya dorstenioides A. Gray, Jour. Bot. 4: 83, 1866.

Small to medium-sized, glabrous tree. Leaves opposite, elliptic, acute at both ends, entire, up to 12 cm. or more long and 7 cm. wide, pinnately nerved, petioles 1 to 2 cm. long. Flowers minute, in a convex hypanthium up to about 1 cm. wide, in branching racemose or paniculate clusters; fruit ovoid, acute, about 1 cm. long, black.

/126 cont./

342 (113)

346. On the subject of ancient Tongan house building: J. Cook, Voyage dans l'Hemisphere Austral.../Voyage in the southern hemisphere/. II. p. 68; the same, Beschreibung.../description/ loc. cit. VI. p. 285; G. Forster, loc. cit. V. p. 139; W. Ellis, An authentic narrative... /cited in English/. I. p. 95; J. Martin, loc. cit. II. p. 279 ff.; J. Dumont d'Urville, Voyage pittoresque /Picturesque voyage/... II. p. 78; Tischner, Die Verbreitung der Hausformen in Ozeanien /The dissemination of house forms in Oceania/. Dissertation. Hamburg 1934. pp. 93/94, 139, 177.

and traditions give us no comprehensive insight into the ancient Tongan dwelling. However, we know that it was a long house with rounded narrow sides. The average house of a chief was approximately 30 feet long and 20 feet wide. (347)

347. See J. Cook, Beschreibung...loc. cit. VI. p. 285.

342 335 Four (or six to ten) posts were connected with a longitudinal beam on which rested four (six) crossbeams which, with their projecting ends, supported a ridge roof /127/ that was additionally held up by special supports on the framework. Nails and mortise were unknown. (284) (824) The beams were lashed together with cords of coconut fiber; these were of different colors (natural-colored, black, red and yellow), and the individual, careful lashings represented "geometric" patterns. 342 824 The roof at the top was about 12 feet high and extended to about four feet beyond the floor. It was covered with sugarcane leaves or--more simply--with coconut leaves. These were plaited together like mats and were fastened like tiles to the rafters. The ancient 342 Tongan dwelling very probably had no walls. As a protection against rain, wind, or lower temperatures, the better houses had curtains of mats fastened together, which could be lowered, while in the simpler houses people made do with mats which they hung up. (348)

/135 cont./

342 463 (tufuanga langa fale). They (with several helpers) erected the chiefs' dwellings and other larger buildings. (363)

363. See J. Martin, loc. cit. II. pp. 96. 279.

342 565 It is to be assumed that commoners mostly built their houses themselves, especially since Mariner reports that everyone knew how to build a house. (364)

342 412 [237] 364. Ibid. p. 279.

The tools used in house building consisted chiefly of various axes with stone blades and rasps with rough fish skins. (365)

365. See W. Ellis, An authentic narrative /cited in English/. I. p. 109; J. T. Plant, Handbuch.../Handbook/ II. p. 374.

342 178 177 463 [868] Today almost every Tongan is still capable of building by himself a dwelling with the ancient Tongan ground plan, and there are also a few "laymen" who can erect a European-type house. Besides, there are, as in old times, special house builders living in every village. They received their training in the traditional way: by working on various house-building projects they gathered knowledge and experience. A few

342 178 177 463 412 335 were trained, European-fashion, as carpenters (for example, in Fiji). Therefore, as a rule, they own an assortment of good English tools (for example, axes, hatchets, adzes, saws, hammers, drills, planes, chisels, caulking irons, screwdrivers, files, clamps, angle irons, levels, tape measures, etc.). Among the rest of the house builders, European axes, transverse hatchets with iron blades and large European machetes, as all-around tools, replace the equipment customary in ancient Tonga, which has long since disappeared throughout the Archipelago.

412 [824] /136/ The big axe (toki lahi) is used to cut down trees and cut up and split trunks. It is usually bought readymade in the commercial centers of the Archipelago; sometimes the natives acquire only the blade (approximately 19 centimeters length and 11.5 centimeters maximum width)

/136 cont./

412 and make the handle themselves (length 85-90 centimeters) out of wood [824] of the toa tree (Casuarina equisetifolia L.).

There are various transverse hatchets; the iron blades are bought [177] and then hand-shafted as desired. To make a fale-vatu lahi the [439] natives like to take an ordinary European hatchet blade of the type [824] which was formerly traded in Tonga by German commercial firms, and provide it with a forked-branch shaft of the feta'u tree (Calophyllum [284] inophyllum). The blade which lies crosswise is fastened (lashed) with [283] coconut-fiber cords (kafa) that are drawn through the eye (provided for the handle by the European factory). The blades necessary for such [439] transverse hatchets can at present no longer be bought from merchants in the Archipelago; the ones in use, which some of their present owners have inherited from their grandfathers, are therefore

[284]

Transverse hatchet (fale-vatu)
with European blade (Expedition Collection, No. 102)

of special value and handled with great care. Sometimes the rear abutment on the shaft, which has to absorb the blow, is protected against splintering by having some six nails driven in. In a typical specimen of the fale-vatu lahi, the measured length of the blade was 18 centimeters and the maximum width 15 centimeters, the length of the handle [342] was 47 centimeters. In house-building, longitudinal grooves are cut [335]

/136 cont./

412 (342) (335) (322) into the coconut-palm pieces of trunk with the fale-vatu lahi in order to make the rafters (kahoki) (see below). This transverse hatchet--with the same shape and shaft--also occurs in a smaller version known as fale-vatu si'i, and is used preferably to "plane" the rafters (chip off unevenness). The toki taha-taha and the toki tele are used for the same purpose. The smaller hatchets (handle length about 30 centimeters) have European planing blades, again mounted crosswise, with the cutting edge fastened to a forked branch with a kafa lashing. Here too the handle usually consists of feta'u wood. In the case of the toki tele are used for the same purpose. The smaller hatchets (handle length about 30 centimeters) have European planing blades, again mounted crosswise, with the cutting edge fastened to a forked branch with a kafa lashing. Here too the handle usually consists of feta'u wood. In the case of the toki tele, parts of a coconut husk are used as a blade cover. Another small transverse hatchet (handle length 25 centimeters), the toki unga ko, may be mentioned. Here a European gouge approximately 20 centimeters long with its curvature resting on an insert of toa wood is attached with a kafa lashing to a feta'u forked branch. Owing to the insert, this blade can be turned and thus makes possible various semicircular cuts.

412 177 284 824

The transverse hatchets mentioned here are often also bound with wire (or hemp) instead of the coconut-fiber cords.

412 177 These transverse hatchets are an interesting fusion of ancient Tongan and European tools: the natives have generally replaced their stone blades /137/ with the various more efficient metal blades, but have retained the old Tongan type of shaft so that they can use the new tool for their traditional working methods (see below). (366)

366. The transverse hatchets are used not only in house-building, but also in woodwork generally (for example, boat-building, see p. 351-353).

331 /141 cont./
342 owners. The palms chopped down with the big axe (toki lahi) (see
476 above) are cut up with the same axe into nine-foot (or eleven-foot)
313 lengths and, for further preparation, are placed on two smaller
342 (properly notched) logs. The "jacked-up" logs are then provided with
476 longitudinal grooves by two Tongans standing opposite each other
335 who, with the big transverse hatchet (fale-vatu lahi) (see above),
412 strike blow after blow, each /worker/ forming a longitudinal groove;
331 /142/ the two longitudinal grooves meet as they are struck, so that the second of the two workers can, with his blows, simultaneously tear the bark and wood out of the resulting fissure and thus lay it open. After turning the log slightly on its supports, another Tongan, /applying/ blow after blow with the big axe, slits the resulting work-piece (the rafter-to-be) on one side. After a further turning, the two men start cutting another lengthwise groove with the transverse hatchet. The process is repeated successively until 10,12 or 15 rafters (kahoki), depending on the circumference of the trunk, are marked off all around the log. Then the kahoki (which already have a preliminary slit on one side) are separated from the log with the big axe and a pointed club (crowbar). With a machete the rough chips are removed and the rafters are loaded on two-wheel, horse-drawn carts and taken to the building site in the village.

331
342 There are no reports about how rafters were made in ancient Tonga.
335 However, it is to be assumed that today's work which seems so primi-
178 tive to us was carried out in the same way in those days, and that
197 there is a change only with respect to the axes, the iron blades of the transverse hatchets and the measurements with English foot rules.

342 The groups of natives, each working on the felled coconut palms
335 (young and old separately, but also individual older men among the
476 young ones), busily engaged, though soon stopping for rather long
461
331

331 /142 cont./
342 rest periods, make 110 rafters by early afternoon. Then they go back
335 to the building site and around 16 o'clock they each have an earth-
476 oven meal, prepared in the meantime by their wives and other women,
(461) (264) from the supplies of the "boss"; each man is served a portion (yams,
(262) manioc, kape, bananas, pork, beef) in a traditional coconut-leaf
(415) basket and with it a coconut mug containing fish soup. Thereafter the
(516) work in the village is resumed: five Tongans sitting crosslegged
"plane" the rafters by striking them with the small transverse hatchets
(fale-vatu si'i, toki taha-taha, toki tele) or with the machete, two
natives cut more rafters out of trunks which are brought from the
plantations, and 12 Tongans hold a kava gathering at the site to
"sanction" the building project, while three women prepare the
(264) evening meal. This is eaten when twilight sets in (around 18:30):
(262) everyone present gets three or four fried cakes and highly sweetened
orange-leaf tea in coconut bowls. Around 19 o'clock everybody goes
home.

342 On the second building day, while several younger natives split
313 off and plane more rafters and a kava circle of elders is gathered on
335 the building site, six Tongans and the carpenter go to the plantations
331 (after the fried-cake and orange-leaf-tea breakfast) to get sections
of curved beams (for the narrow sides of the new building). According
to an apparently very old system, these are cut out of coconut palm
342 trunks that have grown with a special curvature. Again the men work
335 with the big axe and the big transverse hatchet. From each palm a
331 curved section of beam is obtained. Around 13 o'clock- after they
(264) have cut up the seventh palm, they grow listless, build a fire, roast
a few green bananas in it, have a snack and then go back to the
village, leaving the remaining five palms of the day's quota for the
342 following day. Around 14:30, /143/ 'ota 'i mango (a refreshing drink
272 of grated green mangoes, grated coconut meat, water and sugar) is
264

/143 cont./

342 served, and at 15 o'clock everyone gets his basket with his share of
272 the earth-oven meal: manioc, kape, sweet potatoes and salted
264 beef, along with a coconut mug of beef broth. In the afternoon, while
342 a few natives continue splitting and planing rafters, others, with
331 the huo lafa-lafa (shovel iron), (374)

374. See p. 233-234.

level the ground measured off by the carpenter for the house. Under a
[276] temporary corrugated metal roof a kava group of ten older men is
[571] gathered. At 18:45 fried cakes and orange-leaf tea are again handed
[264] out. Then the men slowly go home; a few natives take along a basket of leftovers from the afternoon meal.

[332] On the third day of work, more rafters and curved sections of
[412] beams are made; the ground plan of the house (in ancient Tongan style)
[177] is marked out, and an approximately 15 centimeter excavation is dug (tools: two huo spade [a small iron blade set on an old digging stick;
[276] see page 234] and a European shovel). Four older Tongans form a kava
[571] circle. The meals are the same as on the previous days. The work
[796] stops toward 16 o'clock, for at 17 o'clock the usual church service (Friday) is held.

[335] On the subsequent work days the posts and beams (native and Canadian wood) are cut and planed with the carpenter's tools (transverse hatchet, saws, planes, adzes); the work on the rafters (total number 250) also continues. The meals corresponds to those
[276] of the preceding days. The kava gathering of older men continues to
[571] assemble on the building site.

342 Finally, the four customary posts that are to carry the roof are
331 set in place. However, the carpenter intends to give the house more
335 room and to replace the "disturbing" posts with special supports of Canadian building timber, leading upward obliquely from the side walls;

/ 143 cont./

342 hence only temporary posts are set up. Into the grooved ends the men
331 place the horizontal beams, their position tested with an English
335 water level, and raise and adjust the posts with a traditional lever
[177] tied to each post. Four crossbeams are laid over the longitudinal
[401] beams, and the parts that belong together are lashed with coconut-fiber
[284] cords (kafa) that have been soaked in water. Then the men place two more longitudinal beams over the ends of the cross beams and fasten them the same way with kafa. They put up the ridge lath and ridge
[284] board, supported, for the time being, by provisional posts, at the proper height above the construction and hang the notched rafters to the ridge lath with coconut-cord lashings. The downward extending rafters rest on the longitudinal beams lying on the ends of the
[177] crossbeams. Here they are lashed and at the same time nailed on with European iron nails; this is the part that must then bear the main burden of the construction. The rest of the longitudinal beams are fastened to the lower part of the rafters and to the upper part of the roof with coconut lashings and nails. Then the roof laths are lashed (from the inside) and nailed down. The traditional roof brackets are attached to the crossbeams.

342 Up to this point the entire work procedure--except for the
331 European or Europeanized tools and the use of nails--resembles the
177 ancient Tongan house construction. But now, in place of the coconut-
335 leaf mats (pola) (to be plaited by the women) /144/ pieces of corrugated sheet metal are nailed onto previously applied strips, as roof covering. Then three curved sections of a beam are joined to form a round beam (corresponding to one of the rounded narrow sides of the house). Instead of the customary system of coconut-fiber lashing, they follow the European method of boring through the obliquely sawed ends with a drill and joining them in iron clamps

/144 cont./

342 331 335 177 (284) with wooden tenons. Two of these round beams form the framework of one narrow side of the roof; as in old times, they are set on the ends of the main horizontal beams (375)

375. That is, the horizontal beams resting on the four posts.

(412) and fastened to them with coconut-fiber lashing. Rafters and roof laths are tied over them and nailed, and here, too, strips and corrugated sheet metal--laboriously cut with sheet-iron shears--are nailed on.

It is only now, when the roof is finished, that the men apply themselves to the walls which are built in a quite "modern" form. (333) They pour a cement foundation all around the house (according to the ground plan) in which screws are inserted. To these they screw beams which form the basis for a wall framework to be built between the foundation and the edge of the roof. On this framework they nail the wall boards, allowing for window- and door- openings. Then they take out the four posts which are so important for the ancient Tongan house (which here were set up only temporarily) and replace them with supports extending obliquely from the base of the walls to the joints. The roof now rests partly on the walls--a very considerable change for Tonga.

342 331 The rest of the work is slowly carried out, for the general enthusiasm has abated, especially since the rations have become scarcer (after the boss's last beef has been consumed). Because Christmas preparations are now beginning in the village, only a few willing workers appear at the building site. They cover the floor of the house with sand, paint the outside of the new building with light blue oil paint, attach a gutter and start to make the doors, until the building material gives out and the work stops. However, the

100: Koch--513 E-4,5 (1951-1952) 1955 OU9 Tonga OU9

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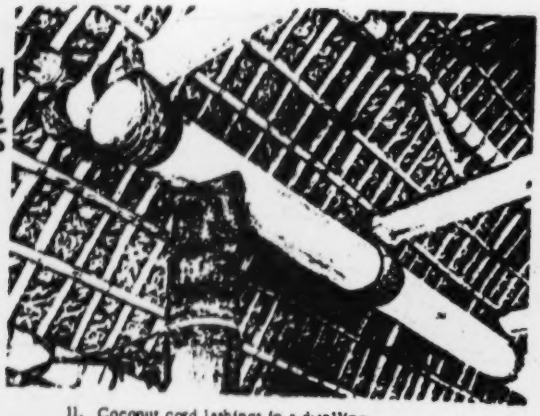

11. Coconut cord lashings in a dwelling

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12. Making rafters with the transverse hatchet fale-vatu

[End Plate 6]